

## Temporary Heart Assist System

### ABSTRACT

A balloon is positionable in the patient's descending aorta. The balloon includes a balloon catheter and two pressure sensors that electrically couple to an extra-corporeal controller. The balloon itself also couples pneumatically to the extra-corporeal controller. 5 An extra-corporeal pump electrically couples to the extra-corporeal controller, the pump having an outlet connectable to the patient's infra-diaphragmatic artery. The pump inlet is connectable via a cannula to the patient's supra-diaphragmatic artery.

10 A doctor inserts the balloon into the descending aorta, and positions the balloon near the level of the patient's diaphragm. A balloon catheter, coupled to the extra-corporeal controller, inflates and deflates the balloon. An electrocardiogram ECG and proximal aortic blood pressure, measured in the upper arterial compartment via a lumen in the balloon catheter, serve as inputs to cycle the balloon synchronously with the heartbeat.